

**EXPLANATION OF SIGNIFICANT DIFFERENCES
TO THE
1992 RECORD OF DECISION
AT THE
JASCO CHEMICAL COMPANY SUPERFUND SITE
IN
MOUNTAIN VIEW, CALIFORNIA**

I. INTRODUCTION

The Jasco Chemical Company (JASCO) Superfund Site consists of the property located at 1710 Villa Street in Mountain View, CA. The site was listed on the National Priorities List (NPL) on October 4, 1989. The United States Environmental Protection Agency, Region IX (EPA), issued the Record of Decision (ROD) on September 30, 1992. EPA is the lead agency for the site.

This Explanation of Significant Differences (ESD) modifies the remedial action selected by EPA in the ROD. This ESD was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), section 117(c), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Oil and Hazardous Substances Contingency Plan (NCP) sections 300.435(c)(2)(i) and 300.825(a)(2). This ESD modifies the treatment method for groundwater, the treatment method for soil in the drainage swale area at the rear of the JASCO facility, and the deed restriction requirement. The groundwater remedy was modified to utilize an air stripper and vapor-phase carbon adsorption treatment in order to meet more stringent National Pollutant Discharge Elimination System (NPDES) permit requirements, which were not in place when the ROD was signed. The soil in the drainage swale area was treated using an alternative method since excavation so close to the railroad tracks would not have been feasible. The deed restriction identified in the ROD is being adjusted to reflect that the groundwater at the JASCO site has been subsequently impacted by an off-site source of contamination.

This ESD will become a part of the Administrative Record file pursuant to NCP §300.825(a)(2) and will be available for review from 8:00 AM to 5:00 PM Monday through Friday, excluding holidays, at the EPA Region IX Superfund Records Center, 95 Hawthorne Street, San Francisco, CA. The Administrative Record File is also available for review at the local repository for JASCO, which is located at the Mountain View Public Library, 585 Franklin Street, Mountain View, CA. The library hours are 10 AM-9 PM Monday through Thursday, 10 AM-6 PM Friday and Saturday, and 1-5 PM on Sunday.

II. SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS, AND SELECTED REMEDY

JASCO repackaged and formulated chemical products on the 2.05 acre Villa Street site from 1976 until December 1995. The facility handled and stored numerous chemicals on site in underground storage tanks, 55-gallon drums, and other containers. Chemicals stored on site include methylene chloride, paint thinner, denatured alcohol, methanol, kerosene, lacquer thinner, and acetone.

The JASCO site came to the attention of regulators in 1983. A private citizen complained about the dumping of materials at the site in January 1983. In 1984, the San Francisco Bay Region, Regional Water Quality Control Board (RWQCB) ordered JASCO to install a monitoring well at the site to determine if the groundwater had been contaminated. Volatile organic solvents (VOCs) were found to be present in the groundwater. VOCs were also discovered in the soils located in the drainage swale area. JASCO began extracting groundwater on February 20, 1987. The extracted groundwater was discharged to the publicly owned treatment works (POTW) under a permit from the City Mountain View (City).

Action to address soil contamination at the site commenced in 1988. In August 1988, JASCO submitted a soil characterization report and runoff management plan to the RWQCB. Soil contamination in the drainage swale included methylene chloride at 3,400 parts per million (ppm); trichloroethylene at 490 ppm; toluene at 1,700 ppm; and acetone at 270 ppm. JASCO excavated and disposed of 572 cubic feet of soil from the drainage swale area at the rear of the site during October 1988.

EPA evaluated the JASCO site under the Hazard Ranking System and proposed the site for inclusion on the NPL in June 1988. In December 1988, EPA ordered JASCO to complete a remedial investigation and feasibility study for the site. In 1989, the JASCO site was placed on the NPL. The Remedial Investigation (RI) was completed in 1991 and the Feasibility Study (FS) was completed in 1992.

On September 30, 1992, EPA issued a Record of Decision and selected the following remedy:

1. On-site construction of a liquid-phase carbon adsorption groundwater treatment unit. Groundwater would be extracted and passed through a liquid-phase carbon adsorption bed. The contaminants would adsorb to the activated carbon, which would then be removed from the site and disposed of at a licensed facility. The treated groundwater would continue to be discharged to the sanitary sewer system under a POTW permit from the City, or an alternate method of discharging water that complied with applicable law.
2. Continued groundwater extraction (pump and treat) until cleanup standards were achieved in all present and future wells at the JASCO facility. Table 1, below, depicts all groundwater cleanup standards to be achieved.

3. Maintenance of hydraulic control (pumping of water to control the flow of the plume) to prohibit further vertical and horizontal migration of the groundwater plume. This requirement would remain in effect until the cleanup standards were achieved.
4. Continued quarterly groundwater monitoring at all monitoring and extraction wells on the JASCO site during the cleanup period. Groundwater samples would continue to be collected to verify the progress of the cleanup and that there was no migration of contaminants above cleanup standards beyond current boundaries or into the deeper B(2)-aquifer zone. The frequency of monitoring would be decreased from quarterly to triannually two years after all site soils were remediated. The frequency of monitoring would be further decreased to biannually once groundwater cleanup standards were achieved in all site wells and sampling confirmed groundwater stability for one year. Sampling and reporting requirements for the JASCO site are contained in the Sampling and Analysis Plan for the site which is part of the Administrative Record for the site.
5. Installation of additional extraction (pumping) wells, in quantities and at locations to be determined by EPA, to improve the performance of the groundwater extraction and treatment system.
6. Ex-situ treatment of all site soils containing chemical concentrations greater than the cleanup standards shown on Table 1, below, with the enhanced biotreatment method. Under this method, contaminated soil would be excavated and placed in an enclosed container. The soil would be mixed with nutrients to encourage digestion of contaminants by microorganisms. The container would have an air distribution system along the bottom. Air drawn through this system would provide oxygen to the microorganisms and also extract the VOCs. The air stream would then pass through an activated carbon adsorption system. The carbon would be taken off-site and disposed of at a facility with a permit to accept hazardous waste.
7. Sampling of site soils beneath the production facility, the drum storage area, and the underground storage tank area to ensure that the concentration of contaminants in these areas did not exceed soil cleanup standards. This sampling would commence within six months after completion of treatment of soils located in the drainage swale area. If contamination exceeded the cleanup standards, the soil would be treated as set forth in #6 above, and if necessary, #8 below.
8. Off-site disposal of site soils containing residual concentrations greater than the soil cleanup standards after completion of biological treatment.
9. A restrictive easement (deed restriction). JASCO was required to file a restrictive easement in the official Records of the County of Santa Clara, prohibiting use of on-site shallow groundwater for drinking water purposes and controlling other subsurface activities. The restrictive easement to remain in place until soil and groundwater cleanup standards were achieved.

Table 1. Summary of Selected Cleanup Standards for Groundwater and Soil Based on Potential Contaminant Migration to Groundwater

	Groundwater Standards (ppm)	Cleanup Standards for Soil (ppm)
Acetone	4	30
Benzene	0.001	0.3
Chloroethane	30	4,000
1,1-Dichloroethane	0.005	0.6
1,1-Dichloroethene	0.006	2.0
1,2-Dichloroethane	0.0005	0.03
<i>c</i> -1,2-Dichloroethene	0.006	1
Diesel or kerosene mixture	3	10,000
Ethylbenzene	0.68	3,000
Methanol	20	200
Methyl Ethyl Ketone	0.6	9
Methylene Chloride	0.005	0.2
Pentachlorophenol	0.001	200
Tetrachloroethene	0.005	7
Toluene	1	1,000
1,1,1-Trichloroethane	0.2	100
Trichloroethene	0.005	3
Vinyl Chloride	0.0005	0.02
Xylenes	1.75	2,000

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THESE DIFFERENCES

Groundwater Treatment System

The selected groundwater remedy identified in the ROD is extraction and treatment by liquid-phase carbon adsorption with discharge to the POTW. During the time the ROD was prepared, JASCO maintained a discharge permit with the City of Mountain View, under which it had discharged extracted groundwater to the POTW since 1987. Although the extracted groundwater met discharge criteria without pretreatment, the selected remedy incorporated liquid-phase carbon adsorption to further reduce contaminant levels prior to discharge. In 1995, the City of Mountain View approved JASCO's Facility Closure Plan and notified JASCO that its POTW discharge permit would not be renewed. Thus, JASCO had to cease POTW discharge by May of 1997. JASCO subsequently negotiated extensions to the permit to allow discharge to the POTW until March of 1998. Due to the City's removal of the POTW discharge permit, wastewater is now discharged to surface waters (Permanente Creek) under a general NPDES permit administered by the RWQCB. The conditions of the NPDES general permit include pretreatment to achieve discharge concentrations consistent with State maximum contaminant levels (MCLs). Because these levels are more stringent than those required under the City permit for POTW discharge, carbon adsorption alone was no longer an effective treatment method.

After eliminating the carbon adsorption treatment alternative, the remaining alternatives considered in the Feasibility Study were re-evaluated. It was concluded that the air stripping alternative should be used at the JASCO site because it met the remedial objectives, could be implemented easily, and had been successfully applied to other sites in the vicinity of JASCO with similar contaminants. In order to meet the more stringent discharge criteria under the NPDES permit, the groundwater treatment remedy was modified to first apply an air stripping technique followed by treatment using liquid-phase carbon adsorption, and an added vapor-phase carbon adsorption treatment. (Air stripping combined with vapor-phase carbon adsorption is a more effective technique than liquid-phase carbon adsorption alone for the remediation of the contaminated groundwater at this site.) The liquid-phase carbon adsorption unit would be utilized as necessary to ensure that discharge standards were being met. Because the initial samples collected after the air stripper treatment but before the liquid-phase carbon adsorption treatment did not exceed discharge criteria, JASCO recommended suspension of the liquid-phase carbon adsorption treatment step. In July 1998, the RWQCB authorized the removal of the liquid-phase carbon unit. Currently, only the air stripper unit and vapor-phase carbon adsorption are used as techniques for treating the extracted groundwater. If it is determined by the involved regulatory agencies, including EPA and the Bay Area Air Quality Management District that vapor-phase carbon adsorption is not necessary to control air emissions in the future, it may be removed from the treatment system.

As a part of the ROD, EPA evaluated six groundwater remedial action alternatives. The alternatives were evaluated using nine criteria which were derived from requirements contained in the National Contingency Plan (NCP) and CERCLA sections 121(b) and 121(c). It was initially determined that Alternative #4 (Carbon Adsorption) would be the most cost effective

remedy in that it would require the least set up and maintenance time and would permanently remove site contaminants. Air stripping was evaluated as a groundwater remedial alternative (Alternative #5), and the only component of this alternative that has changed since it was evaluated in the ROD is the discharge to the POTW. However, although air stripping was not originally selected as the remedy in the ROD, some issues pertaining to the use of this remedy were discussed. What follows will be an overview of these issues and a summary of what was done by JASCO to address these issues.

The ROD states the following for the analysis of air stripping:

This process is complicated due to the low level of groundwater flow at the JASCO site and the requirement that a holding tank be constructed so an adequate amount of water can be stored and then sent through the system. An operator must be available to turn the system on and off. Also, the low flow rate may not provide a strong driving force for the contaminants to adhere to the vapor-phase carbon.

ROD at page 54.

The low level of groundwater flow was addressed by using a low profile air stripper designed for low flow. The holding tank requirements relate to the need for a transfer pump to push the treated wastewater through the carbon and into Permanente Creek. The stripper base, under the trays, acts as the holding tank to allow creek discharge via a transfer pump at higher flow rates than the extraction pumps. To address the concern that an operator would be needed to start and stop the system, the system was designed and constructed to stop automatically under certain alarm conditions (e.g. high water level), which activated an audible alarm inside the JASCO building. Under regular operating conditions, the system operates without interruption.

During the time that JASCO maintained an office at the facility, the arrangement was for JASCO to contact its contractor if the alarm was activated. JASCO's contractor would then send an operator to troubleshoot and restart the system. Now that JASCO's office at the facility has been demolished, an auto-dialer will be a component of the treatment system's reconfiguration. The contractor will be automatically contacted when the alarm is activated so that any system problems can be addressed and the system can be restarted. As a component of ongoing operation and maintenance (O&M) activities, the contractor shuts off the system for a few hours approximately once each month to inspect or clean the air stripper trays, piping, and pump systems. The other primary scheduled shutdown is for carbon change out.

Soil Treatment System

The rear of the JASCO facility (the drainage swale area) borders a commuter rail line which operates between San Francisco and San Jose. The selected remedy for this area of the site required excavation and treatment of soils (ROD, September 1992). The rail line changed owners in 1993. The commuter rail line is currently operated by the Joint Powers Board (JPB). The JPB issued new requirements for conducting work close to the rail line. As a result, JASCO

asked EPA to consider a different technology for soils cleanup in this area, which would not require excavation of the soil. EPA approved JASCO's proposal to evaluate soil vapor extraction (SVE) as a technique for removing contamination from soils in this area of the site.

An SVE system operated in the drainage swale area of the site from April 1995 to February 1998. During this period of operation, samples were collected from soil and soil vapor (air samples) to see if chemicals found on site were still present, and to evaluate the effectiveness of the system in cleaning up the soil. Additional confirmation sampling was carried out by EPA on February 26, 2002. EPA has evaluated the results of this system and found that it was successful at cleaning up the soil to below the ROD-specified cleanup goals. Thus, the enhanced bioremediation system specified in the ROD was not used in the drainage swale area. The SVE system took the place of the selected remedy in the drainage swale area only.

Deed Restriction

The ROD states that JASCO shall be required to put a deed restriction in place to restrict the use of groundwater for drinking water purposes and to control other subsurface activities until soil and groundwater cleanup standards are achieved. A deed restriction is currently in place. However, a second distinct plume of PCE was discovered at the JASCO site after the ROD was finalized. EPA and the RWQCB conducted an analysis and concluded that JASCO is not the source of this PCE contamination. Thus, JASCO will not be held responsible for cleaning up this PCE plume. Nevertheless, this PCE plume is adversely impacting groundwater at the JASCO site. Consequently, groundwater use and subsurface activities at the JASCO site must remain restricted until such time as the appropriate authorities are able to address this PCE plume.

A restriction will be put in place in order to eliminate the potential for exposure to chemical vapors during future construction activities at the site and to ensure that the underlying groundwater will not be disturbed. Under the terms of the restriction, activities that may disturb the effectiveness of the extraction and monitoring system or cause the release of contaminants from the vadose zone or the groundwater in Aquifers A or B (e.g., excavation, grading, removal, trenching, filling, earthmoving, or mining) will be restricted. This restriction will be recorded as an "Environmental Restriction" under Section 1471 of the California Civil Code (CCC) and will run with the land. An "Environmental Restriction" under Section 1471 is a covenant or grant under which an owner or grantee of land covenants to do or refrain from doing some act on his or her land that is reasonably necessary to protect human health or the environment. CCC § 1471. The JASCO site Environmental Restriction will involve a covenant or grant from the property owner to a state or local governmental entity.

Applicable or Relevant and Appropriate Requirements (ARARs)

The changes to the remedy that were discussed in this ESD continue to meet all ARARs. The ARARs determined to be pertinent to the selected remedy in the ROD are also pertinent to the remedy in the ESD. The additional ARARs pertinent to the ESD remedy are Clean Air Act (CAA) requirements and Clean Water Act (CWA) NPDES requirements. Discharge to surface

waters rather than to the POTW required additional treatment to comply with the requirements of a general NPDES permit. The applicable substantive requirements under the CAA are implemented through Bay Area Air Quality Management District (BAAQMD) rules. The BAAQMD rules pertinent to aeration of contaminated soil and operation of an air stripper were identified in the ROD. All ARARs are met by the ESD remedial activities.

IV. COMPARATIVE SUMMARY OF SIGNIFICANT DIFFERENCES IN THE REMEDY

1992 Remedy from ROD

- Ex-situ soil biotreatment site-wide. The ROD estimated that the excavation costs would be \$200,000 and treatment costs were estimated at \$165,000 to \$248,000.
- Off-site soil disposal of treated soil still exceeding cleanup standards
- Groundwater treatment system equipped with liquid-phase carbon adsorption units. The ROD estimated that the total capital cost associated with the installation and cost for two carbon units annually would be \$38,400. The annual operating costs for the unit were estimated at \$32,800.
- Treated groundwater discharged to the POTW under a discharge permit with the City of Mountain View
- Deed restriction in place to restrict the use of groundwater for drinking water purposes and to control other subsurface activities until cleanup levels are met in soil and groundwater

2002 ESD Remedy

- Ex-situ soil biotreatment site-wide **except the drainage swale area.** An SVE system was used in the drainage swale area. Approximately \$339,219 was spent on the implementation of this treatment system.
- Off-site soil disposal of treated soil still exceeding cleanup standards
- Groundwater treatment system equipped with **an air stripper unit with vapor-phase carbon adsorption.** The ROD estimated that the total capital cost associated with the installation of an air stripper and vapor-phase carbon adsorption was \$46,000. The annual operating costs associated with operating the air stripper and vapor-phase carbon adsorption were estimated at \$12,000.
- Treated groundwater discharged to **surface waters under an NPDES permit**
- A restriction will be put in place in order to eliminate the potential for exposure to VOC vapors during future construction activities at the site and to ensure that the underlying groundwater will not be disturbed.

V. SUPPORT AGENCY COMMENTS

The support agency for the JASCO site has been the San Francisco Bay Region, Regional Water Quality Control Board (RWQCB). This ESD was presented to the RWQCB. The RWQCB chose not to provide comments based on its limited participation with JASCO in recent years.

VI. AFFIRMATION OF STATUTORY DETERMINATION

Based on the confirmation sampling and groundwater monitoring that took place at the JASCO site (including the drainage swale area) and considering the changes that have been made to the selected remedy, U.S. EPA believes that the remedy remains protective of human health and the environment, continues to meet ARARs as specified in the NCP, section 300.430(f)(1)(ii)(B)(1) and (2), and complies with CERCLA §121.

VII. PUBLIC PARTICIPATION COMPLIANCE

Numerous EPA community involvement activities have occurred in response to activities at the JASCO site. Fact Sheet 1, mailed in July 1988, announced the proposed addition of the JASCO site to the National Priorities List and discussed the future submittal of the Remedial Investigation Work Plan. Fact Sheet 2 was mailed in January 1991 to residences and businesses located within a 1 mile radius of the site. Information in this fact sheet discussed results of the Remedial Investigation (RI) Study, and announced future submittal of the Risk Assessment and the Feasibility Study (FS) report. Fact Sheet 3 was mailed in June 1992 and discussed the proposed plan, cleanup standards, and an opportunity for public comment during an evening meeting. In addition, EPA published a notice in the San Jose Mercury News and the Los Altos Town Crier to announce the RI/FS, Proposed Plan, and an opportunity for public comment. Fact Sheet 4 was issued during June 1996 and announced that soil cleanup was set to begin at the JASCO site.

An ESD notice will be published in a local newspaper as required by the NCP, section 300.435(c)(2)(i)(B). No significant changes have been made that will affect the end result of remedial action. The public participation requirements set out in the NCP, sections 300.435(c)(2)(i) and 300.825(a)(2), will continue to be met.


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9/13/02

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